

Customer No.: 31561
Application No: 10/709,719
Docket No.: 13114-US-PA

REMARKS

Present Status of the Application

This is a full and timely response to the outstanding non-final Office Action mailed on September 30, 2005. The Office Action has objected to the title of the invention. The Office Action has also rejected claims 34-38, 43, 46-49 under 35 U.S.C. 102(b) as being anticipated by Kim et al. (USP 5,252,845). The Office Action has further rejected claims 39-42, 44-45, 50-51 under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Hisamoto et al. (USP IEDM 91).

Upon entry of the amendments in this response, claims 34-36, 38-51 remain pending. More specifically, claim 34, 38, 43 and 46 have been amended and claim 37 has been cancelled to more accurately describe the invention. It is believed that no new matter is added by way of these amendments made to the claims or otherwise to the application.

After carefully considering the remarks set forth in this Office Action and the cited references, Applicants respectfully submitted that the presently pending claims are already in condition for allowance. Reconsideration and withdrawal of the Examiner's rejection are requested.

Discussion of Office Action Objection

The Office Action objected to the title of the invention for not being descriptive.

Customer No.: 31561
Application No: 10/709,719
Docket No.: 13114-US-PA

Accordingly, Applicant has amended the title of the invention to read "MULTI-GATE DRAM WITH DEEP-TRENCH CAPACITOR AND FABRICATING METHOD THEREOF".

Reconsideration of the objection is courteously requested.

Discussion of Office Action Rejections

The Office Action rejected claims 34-38, 43, 46-49 under 35 U.S.C. 102 (b) as being anticipated by Kim et al. (US 5,252,845, Kim hereinafter).

Applicants respectfully assert that Kim is legally deficient for the purpose of anticipating claims 34 and 46 for the reasons that each and every element of the claims in issue is not found in the prior art reference.

The present invention teaches substantially, among other things, in claim 34 "...forming a word line including a multi-gate over the substrate, wherein the multi-gate is formed as a treble gate on three sidewalls of the pillar and is separated from the pillar by the gate dielectric layer ...;" and in claims 46, "...forming a word line including a multi-gate over the substrate, wherein the multi-gate is formed as a surrounding gate that surrounds at least three sidewalls of the pillar and is separated from the pillar by the gate dielectric layer..." . On the other hand, Kim teaches a spacer-like word line 116 formed on a single sidewall of the silicon crystal 113 (please see Fig 7). In other words, Kim fails to teach a word line 948, 1820, 2240 that includes a multi-gate over the substrate, wherein the multi-gate, such as a treble gate 954, 1820a,b,c, or a surrounding gate 2250, is at least on three sidewalls of the pillar.

Customer No.: 31561
Application No: 10/709,719
Docket No.: 13114-US-PA

For at least these reasons, Applicant respectfully asserts that Kim fails to teach or suggest the present invention or to render claims 34 or 46 anticipated. Since claims 35-36, 38-45 & claim 47-51 are dependent claims, which further define the invention recited in claims 34 and 46, respectively. Applicants respectfully assert that these claims also are in condition for allowance. Thus, reconsideration and withdrawal of this rejection are respectfully requested.

The Office Action rejected claims 39-42, 44-45 and 50-51 under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Hisamoto et al. (IEDM 91, Hisamoto hereinafter).

With regard to the 103 rejections of claims by Kim in view of Hisamoto, Applicants ~~respectfully submit that these claims defined over the prior art references for at least the~~ reasons discussed above.

Moreover, the Office has construed that Hisamoto teaches the top of the word line is lower than the top of the pillar (i.e. the capacitor). Applicant respectfully disagrees for the fact the pillar of the instant case and the capacitor are of different entities. Claims 34 and 46 specifically teaches the semiconductor pillar is formed beside the capacitor, and the word line 948, 1820, 2240 is formed definitely above than the capacitor 910 in the present invention. Additionally, Hisamoto fails to disclose the second source/drain is a buried strap in a lower portion of the pillar apart from the first source/drain region.

Customer No.: 31561
Application No: 10/709,719
Docket No.: 13114-US-PA

For at least the reason set forth hereinbefore, Applicants submit that the rejections to claims 39-42, 44-45 and 50-51 have been traversed, rendered moot, and/or accommodated, and that the pending claims 39-42, 44-45 and 50-51 are in condition for allowance. Favorable consideration and allowance of the present application and all pending claims are hereby courteously requested.

Customer No.: 31561
Application No: 10/709,719
Docket No.: 13114-US-PA

CONCLUSION

For at least the foregoing reasons, it is believed that the presently pending claims 34-36, 38-51, are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date: Dec. 29, 2005

Respectfully submitted,


Belinda Lee

Registration No.: 46,863

Jianq Chyun Intellectual Property Office
7th Floor-1, No. 100
Roosevelt Road, Section 2
Taipei, 100
Taiwan
Tel: 011-886-2-2369-2800
Fax: 011-886-2-2369-7233
Email: belinda@jcipgroup.com.tw ;
usa@jcipgroup.com.tw